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17. Sadler, T.W., M. Rogers, H. Slavkin, J. Lauder, P. Maness, E. Linney, K. Sulik, and P. Mirkes. 1997. Growth and differentiation factors. *Reproductive Toxicol.* 11: 331-337.

Publications: Review Articles

1. Sadler, T.W. 1985. **The Role of Embryo Culture in Developmental Biology and Teratology**. Issues and Reviews in Teratology, Vol. 3. Harold Kalter, ed. Plenum Publishing Corp., New York, pp 273-294.
2. Sadler, T.W., W.E. Horton, Jr., and E.S. Hunter, III. 1985. **Mammalian Embryos in Culture: A New Approach to Investigating Normal and Abnormal Developmental Mechanisms**. In: *Developmental Mechanisms: Normal and Abnormal*. James W. Lash and Lauri Saxen, eds. Alan R. Liss, Inc., New York, pp 227-240.
3. Sadler, T.W., C.W. Warner, S.A. Tulis, and M. Kate Smith. 1985. **Factors Determining the In Vitro Response of Rodent Embryos to Teratogens**. In: *The Joint American Swiss Seminar on Alternative Embryotoxicity and Teratogenicity Tests*. F. Homburger and A.M. Goldberg, eds. S.Karger A.G., Basel, pp 36-45.
4. Sadler, T.W., W.E. Horton, Jr., and E.S. Hunter, III, 1986. **Mechanisms of diabetes-induced congenital malformations as studied in mammalian embryo culture**. In: *Diabetes and Pregnancy: Teratology, Toxicity, and Treatment*. L. Jovanovic, C.M. Peterson, and K. Fuhrmann, eds. Praeger Press, Philadelphia, pp 51-71.
5. Sadler, T.W. and Ulf J. Eriksson. 1987. **Animal models for diabetes-induced embryopathies**. In: *Issues and Reviews in Teratology*, Vol. 4. Harold Kalter, ed. Plenum Publishing Co., New York. pp 283-304.

6. Sadler, T.W., E.S. Hunter, III, Wayne Balkan, and R.E. Wynn. 1987. **The role of maternal serum factors in diabetes-induced embryopathies as studied in whole embryo culture.** In: Approaches to Elucidate Mechanisms in Teratogenesis. Hemisphere Publishing Corp. In Press.
7. Hunter, E.S., III, and T.W. Sadler. 1988. **Embryonic metabolism of fetal fuels in whole embryo culture.** Toxicol. In Vitro, 2:163-167.
8. Sadler, T.W., L. Shum, C.W. Warner, and M. Kate Smith. 1988. **The role of pharmacokinetics in determining the response of rodent embryos in whole embryo culture.** Toxicol. In Vitro, 2:175-180.
9. Lauder, J.M. and T.W. Sadler. 1988. **Serotonin and morphogenesis in the cultured mouse embryo.** In: Neural Development and Regeneration, Vol. H22. A. Gorio, ed. NATO ASI Series, Springer-Verlag, Berlin. pp 135-154.
10. Sadler, T.W., K.M. Denno, and E.S. Hunter, III. 1993. **Effects of altered maternal metabolism during gastrulation and neurulation stages of embryogenesis.** In: Maternal Nutrition and Pregnancy Outcome. C.L. Keen, A. Bendich, and C.C. Willhite, eds. Annals N.Y. Academy Sciences, pp 48-61.
11. Sulik, K.K. and T.W. Sadler. 1993. **Postulated mechanisms underlying the development of neural tube defects: Insights from in vitro and in vivo studies.** In: Maternal Nutrition and Pregnancy Outcome. C.L. Keen, A. Bendich, and C.C. Willhite, eds. Annals N.Y. Academy Sciences, pp 8-21.
12. Sadler, T.W. and E.S. Hunter, III. 1994. **Principles of abnormal development; past, present, and future.** In: Developmental Toxicology. C.A. Kimmel, J. Buelke-Sam, eds. Raven Press, N.Y. pp 53-63.
13. Sadler, T.W. 1998. **Mechanisms of neural tube closure and defects.** Mental Retardation Dev Dis Rev, 4: 247-253.
14. Sadler, T.W. 2000. Embryology of the Sternum. Chest Surgery Clinics of North America: Surgical Treatment of Anterior Chest Deformities. 10:237-244.
15. WFO Morasas, RT Riley, KA Hendricks, VL Stevens, TW Sadler, JG van-Waes, SA Missmer, J Cabrera, O Torres, WCA Gelderblom, J Allegood, C Martinez, J Maddox, JD Miller, L Starr, MC Sullards, AV Roman, KA Voss, E Wang, and AH Merrill. 2004. Fumonisin disrupt sphingolipid metabolism, folate transport, and neural tube development in embryo culture and in vivo: A potential risk factor for human neural tube defects among populations consuming fumonisin-contaminated maize. J. Nutr. 134: 711-716.

Publications: Text Books

1. Sadler, T.W. 1985. **Jan Langman's Medical Embryology** 5th edition, Williams and Wilkins Co., Baltimore, Md.

2. Sadler, T.W. 1985. **Study Guide and Self Examination Review for Langman's Medical Embryology** Williams and Wilkins Co., Baltimore, Md.
3. Sadler, T.W. 1990. **Langman's Medical Embryology** 6th edition, Williams and Wilkins Co., Baltimore, MD.
4. Sadler, T.W. 1995. **Langman's Medical Embryology** 7th edition, Williams and Wilkins Co., Baltimore, MD.
5. Sadler, T.W. 2000. **Langman's Medical Embryology** 8th edition, Lippincott, Williams and Wilkins, Baltimore, MD.
6. Sadler, T.W. 2004. **Langman's Medical Embryology** 9th edition, Lippincott, Williams and Wilkins. Baltimore, MD.
7. Sadler, T.W. 2004. **Langman's Essential Medical Embryology** 1st edition, Lippincott, Williams, and Wilkins, Philadelphia, PA.
8. Sadler, T.W. 2006. **Langman's Medical Embryology** 10th edition, Lippincott, Williams and Wilkins, Baltimore, MD.
9. Sadler, T.W. 2009. **Langman's Medical Embryology** 11th edition, Lippincott, Williams, and Wilkins, Baltimore, MD.
10. Sadler, T.W. 2012. **Langman's Medical Embryology** 12th edition, Lippincott, Williams, and Wilkins. Baltimore, MD.

Publications: Abstracts

1. Sadler, T.W. and D.M. Kochhar. 1975. Light and electron microscopic analysis of chlorambucil induced cell death in malformed mouse limb buds. *Teratology*, 11:32A.
2. Sadler, T.W. 1976. Chlorambucil-induced cell death in embryonic mouse limb buds. *Anat. Rec.*, 184:519A.
3. Sadler, T.W., D.M. Kochhar, and R.R. Cardell, Jr. 1976. Effects of hydroxyurea on the ultrastructure of neuroepithelial cells in mouse embryos. *Teratology*, 13:35A.
4. Kochhar, D.M. and T.W. Sadler. 1976. Postimplantation mouse embryos in culture: Metabolic correlates of cytotoxic effects of hydroxyurea. *J. Cell Biol.*, 70:143A.
5. Sadler, T.W. 1977. In vitro development of mouse embryos during early stages of tissue and organ differentiation: A model for teratological research. *Teratology*, 15:27A.
6. Burk, Dorothy T. and T.W. Sadler. 1978. Surface coat formation during lip and neural tube development in mouse embryos. *Anat. Rec.*, 190:351A.

7. Sadler, T.W. 1979. Effects of hyperglycemia and diabetic rat serum on neural tube closure in early somite mouse embryos maintained in whole embryo culture. *Anat. Rec.*, 196:42A.
8. Davis, Lynn A. and T.W. Sadler. 1980. Effects of vitamin A on development of endocardial cushions. *Anat. Rec.*, 193:672A.
9. Sadler, T.W. 1980. Ultrastructural analysis of malformations produced by maternal diabetes. *Anat. Rec.*, 196:163A.
10. Lacy, Karen K., John M. DeSesso, T.W. Sadler, and Joseph M. Lary. 1980. A comparison of the teratogenic effects of radiofrequency radiation and hyperthermia: Light microscopic evaluation. *Teratology*, 21:52A.
11. Sadler, T.W. 1980. Inhibition of neural fold closure produced in vitro by excess glucose and diabetic serum. *Teratology*, 21:66A.
12. Sadler, T.W. and J.L. Lessard 1981. Patterns of actin distribution during neurulation in the mouse embryo. *Anat. Rec.*, 199:221A.
13. Sadler, T.W. and W.E. Horton Jr. 1981. Effects of insulin and serum from diabetic rats on mouse embryogenesis in vitro. *Teratology*, 23: 42A.
14. Horton, W.E., Jr. and T.W. Sadler. 1981. Effects of the ketone body, β -hydroxybutyrate, on cultured mouse embryos. *Teratology*, 23:59A.
15. Horton, W.E., Jr. and T.W. Sadler. 1982. Mitochondrial changes in embryos exposed to a ketone body in whole embryo culture. *Anat. Rec.*, 202:84A.
16. Sadler, T.W., L.C. Clark, Jr., D.G. Kinnet, and J.E. Ferris. 1982. Effects of polyfluorinated hydrocarbons on mouse embryo development in whole embryo culture. *Teratology*, 25:73A.
17. Sadler, T.W., C.W. Warner, J. Shockey, and M.K. Smith. 1982. A comparison of the in vivo and in vitro (whole embryo culture) response of mammalian embryos to a teratogenic insult. *Teratology*, 25:73A.
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32. Balkan, Wayne and T.W. Sadler. 1987. Altered structure and function in the visceral yolk sac following exposure of mouse conceptuses to a somatomedin inhibitor in vitro. *Anat. Rec.*, 218:13A.
33. Shum, Lillian and T.W. Sadler. 1987. Catch up growth in the embryo after teratogenesis. *Anat. Rec.*, 218:126A.
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35. Balkan, W. and T.W. Sadler. 1987. Effects of a somatomedin inhibitor on mouse conceptuses. *Teratology*, 35:71A.
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40. Smoak, I.W. and T.W. Sadler. 1988. Effect of short term hypoglycemia on mouse embryos in vitro. Teratology, 37: 495.
41. Hunter, E.S., III and T.W. Sadler. 1988. Biochemical effects of hypoglycemia on neurulating mouse conceptuses in vitro. Teratology, 37:466.
42. Lauder, J.M., R. Thomas, D.L. Shuey, H. Tamir, and T.W. Sadler. 1988. Serotonin and morphogenesis in the cultured mouse embryo. Teratology, 37:473.
43. Shum, L. and T.W. Sadler. 1988. Embryonic recovery after exposure to a teratogen. Teratology, 37:492.
44. Lauder, J.M., R. Thomas, D.L. Shuey, H. Tamir and T.W. Sadler. 1988. Serotonin as a morphogen in mouse embryogenesis. Europ. Soc. Neurosci., 191.
45. Smoak, I.W. and T.W. Sadler. 1989. Hypothermia and Hypoglycemia: Teratogenic and metabolic effects in mouse embryos in vitro. Teratology, 39:482.
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49. Hunter, E.S., III, I.W. Smoak, and T.W. Sadler. 1989. A potential role for hypoglycemia in the diabetic embryopathy. Diabetes, 38:89A.
50. Shuey, D.L., R. Thomas, M. Yavarone, H. Tamir, T.W. Sadler, and J.M. Lauder. 1989. Serotonin and morphogenesis during neurulation and craniofacial development in the mouse. Soc. Neurosci Abst. 15:1016.
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55. Liu, Ed and T.W. Sadler. 1990. Inhibition of int-1 expression by antisense oligonucleotides induces cardiac abnormalities in the developing mouse embryo. *Proceedings of the Oncogene Meetings*, Frederick, MD.
56. Hunter, E.S., III and T.W. Sadler. 1991. Developmental Toxicity of Cocaine and its metabolites. *Teratology*, 43:426.
57. Denno, K.M., Xia Ping He, and T.W. Sadler. 1991. Factors in phenylketonuria: Developmental abnormalities caused by phenylethylamine. *Teratology*, 43:463.
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61. Denno, K.M. and T.W. Sadler. 1992. Oral hypoglycemic agents: Biguanides and their effects on developing mouse embryos. *Teratology*, 45: 430.
62. Augustine, K., E.T. Liu, and T.W. Sadler. 1992. Examining possible roles of the Wnt-1 proto-oncogene in murine embryogenesis. *Teratology*, 45: 444.
63. Sadler, T.W., K. Augustine, and E.T. Liu. 1992. Antisense oligonucleotides to Wnt-1 produce altered phenotypes in mouse embryos in whole embryo culture. *Oncogene Meetings*, Frederick Summer Cancer Conferences.
64. Sadler, T.W., K.A. Augustine, and E.T. Liu. 1992. A potential role for proto-oncogenes and homeobox genes in normal and abnormal craniofacial development. *Proc. Greenwood Genetics Ctr.*, 11:77A.
65. VandeBerg, Bruce and T.W. Sadler. 1993. Examining the role of the mouse retinoic acid receptor beta in development. *Teratology*, 47:382.
66. Augustine, K.A., E.T. Liu, and T.W. Sadler. 1993. Antisense oligonucleotide inhibition of two related Wnt family members reveals a shared functional redundancy in spinal cord development. *Teratology*, 47:389.

67. Denno, K.M., T.W. Sadler, T.A. Buchanan, and G. Sipos. 1993. Glycemia and embryogenesis. *Teratology*, 47:417.
68. He, X.P., K.K. Sulik, and T.W. Sadler. 1993. Pathogenesis of valproic acid-induced spina bifida. *Teratology*, 47:420.
69. Sadler, T.W. and B.A. Van de Berg. 1993. Use of the whole embryo culture system to study mechanisms of normal and abnormal neural tube closure. *proc. Greenwood Genetics Ctr.*, 12:40A.
70. Augustine, K.A., X.P. He, E.T. Liu, and T.W. Sadler. 1994. The proto-oncogene, *axl*, plays a role in facial morphogenesis in the developing mouse embryo. *Teratology*, 49:365.
71. Augustine, K.A., E.T. Liu, and T.W. Sadler. 1994. Expression loss of the homeobox, *engrailed-1*, reveals caudal regression and neural duplication in the developing mouse. *Teratology*, 49:365.
72. Peet, Jennifer and T.W. Sadler. 1994. Embryonic cardiac metabolism under hypo- and euglycemic conditions. *Teratology*, 49:373.
73. Sadler, T.W. and J.H. Peet. 1994. Hypoglycemia increases the risk of congenital heart defects. *Proc. Greenwood Genetics Ctr.*, 13:69 A.
74. Sadler, T.W., E.T. Liu, and K.A. Augustine. 1994. Antisense inhibition of *engrailed-1* causes abnormal patterning of the brain and spinal cord of mouse embryos. *Cell Biology*, 353a.
75. Foerst Potts, L. and T.W. Sadler. 1995. The role of *Msx-1* and *Msx-2* in development using antisense technology with murine whole embryo culture. *Teratology*, 51:156.
76. Denno, K.M. and T.W. Sadler. 1995. Disruption of sonic hedgehog causes neural tube abnormalities. *Teratology*, 51:163.
77. Sadler, T.W., E.T. Liu, and K.A. Augustine. 1995. *Wnt* and *Engrailed* genes involved in normal and abnormal craniofacial development and caudal dysgenesis. *Proc. Greenwood Genetics Ctr.*, 14:44A.
78. Bauman, J.W., K.M. Denno, B.B. Taylor, and T.W. Sadler. 1996. Developmental toxicity induced by antisense inhibition of catalase in cultured mouse embryos. *Teratology*, 53:84.
79. Foerst Potts, L. and T.W. Sadler. 1996. Antisense disruption of the *Msx* genes reveals functional roles crucial to the development of craniofacial, eye and axial structure. *Teratology*, 53:84.
80. Foerst-Potts, L., M. Monroe, and T.W. Sadler. 1997. Antisense disruption of the *Msx* genes reveals roles in development of craniofacial, eye, and axial structures.

81. Denno, K.M. and T.W. Sadler. 1997 Disruption of *sonic hedgehog* causes neural tube abnormalities.
82. Monroe, MC, KM Denno, SH Zeisel, and T.W. Sadler, 1999. The role of choline in the development of neurulating mouse embryos. *Dev. Biol.*, 210:236.
83. Monroe, MC, KA Augustine, KM Denno, and T.W. Sadler, 1998. Using antisense oligodeoxynucleotides and mouse whole embryo culture to study genes important in gastrulation and neurulation. NIH Symposium.
84. Burgoon, JM, M Nadeau, J Selhub and TW Sadler, 2001. Abnormal development in folic acid deficient mice. *Proc. Greenwood Genet. Ctr.*, 20: 84.
85. Sadler, TW, M Bulman, and P Wang, 2002. Folic acid amelioration of hyperthermia and fumonisin-induced growth retardation and birth defects. *Proc. Greenwood Genet. Ctr.* 21:50.
86. Sadler, T.W., M. Bulman, and P. Wang, 2002. Folic acid ameliorates toxicant induced growth retardation and birth defects: Including fumonisin and hyperthermia. FASEB, Experimental Biology Meetings.
87. Sadler, T.W., M. Bulman, and P. Wang, 2003. It's the folic acid...Isn't it? *Proc. Greenwood Genet. Ctr.* 20: 90.
88. Sadler, T.W., M. Bulman, J. Burgoon, and P. Wang. 2004. Folic acid acts through the nucleic acid pathway to prevent birth defects. *Proc. Greenwood Genet. Ctr.* 23: 112.
89. Sadler, T.W. 2005. What do the penis, neural tube, eye, lip, palate and heart have in common? *Proc. Greenwood Genet. Ctr.* 24: 102.
90. Sadler, T.W., J.C. Carey, and M. Feldcamp 2006. Gastroschisis: A Schism for Sure? *Proc. Greenwood Genet. Ctr.* 25: 76-77.
91. Sadler, T.W. 2007. Embryology of the gut and related malformations. *Proc. Greenwood Genet. Ctr.* 26: 86-87.
92. Sadler, T.W. 2008. Models for gastroschisis: Is upside down as good as right side up? *Proc. Greenwood Genet. Ctr.* 27: 54.
93. Sadler, T.W. 2009. Limb body wall complex: Another of those ventral body wall defects. David W. Smith Workshop on Malformations and Morphogenesis.
94. Sadler, T.W. 2010. Looking into the role of serotonin in heart development and the origin of SSRI-induced heart defects. David W. Smith Workshop on Malformations and Morphogenesis.
95. Sadler, T.W. 2011. Vasculogenesis and Angiogenesis: The origin of blood vessels and congenital defects (or not). David W. Smith workshop on Congenital Malformations and Morphogenesis.

Presentations: Seminars

1. 1977. Department of Pharmacology, Freie Universitat, Berlin.
2. 1977. Department of Physiology, Cambridge University, United Kingdom.
3. 1977. Department of Anatomy, Middlesex Hospital Medical School, London, United Kingdom.
4. 1977. Department of Anatomy, Oxford University, Oxford, United Kingdom.
5. 1978. NIH/National Institute of Neurological Diseases and Stroke.
6. 1980. Department of Pediatrics, University of Cincinnati.
7. 1980. Institute for Developmental Research, Children's Hospital Research Foundation, Cincinnati.
8. 1981. Department of Animal Genetics, University of Connecticut, Storrs.
11. 1981. Department of Anatomy, Bowman Gray School of Medicine, Wake Forest University, Winston-Salem.
10. 1982. Division of Toxicology, Warner Lambert Corporation, Ann Arbor.
11. 1983. Department of Pharmacology, University of Texas, Houston.
12. 1983. Department of Anatomy, University of New Mexico, Albuquerque.
13. 1985. Diabetes Research and Training Center, University of Virginia, Charlottesville, Virginia.
14. 1986. Department of Pharmacology and Toxicology, University of Florida, Gainesville.
15. 1986. Developmental Biology Seminar Series, University of North Carolina, Chapel Hill.
16. 1988. Center for Environmental Health, University of Connecticut, Storrs.
17. 1988. Department of Pediatrics, University of Indiana Children's Hospital, Indianapolis.
18. 1989. Department of Biochemistry/Molecular Biology, University of Kansas Medical Center, Kansas City.
19. 1989. Department of Anatomy, Bowman Gray School of Medicine, Winston-Salem.
20. 1989. Department of Cell Biology and Anatomy, Medical College of Wisconsin, Milwaukee, WI.
21. 1990. Children's Hospital, University of Cincinnati, Cincinnati, OH.

22. 1990. Environmental Protection Agency, Research Triangle Park, NC.
23. 1990. Department of Obstetrics and Gynecology, Yale University, School of Medicine, New Haven, CT.
24. 1991. Department of Obstetrics and Gynecology, Indiana University, School of Medicine, Indianapolis, IN.
25. 1993. Department of Anatomy, East Tennessee State University, Quillen-Dishner College of Medicine, Johnson City, TN.
26. 1995. Department of Medicine and Molecular Genetics, Indiana University, School of Medicine, Indianapolis, IN.
27. 1995. Program in Developmental Biology, University of Cincinnati, School of Medicine, Cincinnati, OH.
28. 1995. Department of Anatomy and Cell Biology, Jefferson Medical Center Philadelphia, PA,
29. 1995. National Center for Toxicological Research, Jefferson, AR.
30. 1995. Department of Biology, Chapel Hill High School, Chapel Hill, NC.
31. 1996. Department of Pediatrics, University of Iowa, Iowa City, IA.
32. 1999. Texas Division of Public Health, Austin, TX.
33. 1999. Cincinnati Center for Developmental Disorders, University of Cincinnati Cincinnati, OH,
34. 1999. East Carolina University, Greenville, NC.
35. 2000. Texas Department of Public Health State Birth Defects Registry Meeting, Houston, TX.
36. 2004. Food Science and Human Nutrition Department, University of Florida, Gainesville, FL.
37. 2008. Department of Pediatrics, University of Virginia, Charlottesville, VA.
38. 2010. Department of Medical Genetics, University of Calgary, Grand Rounds, Calgary, Canada.
39. Department of Pediatrics, University of Utah, 3rd Annual American Journal of Medical Genetics Lecture, Salt lake City, UT.
40. Department of Obstetrics and Gynecology, University of Utah, Grand Rounds, Salt Lake City, UT.

Presentations: Symposia and Workshops

1. 1980. NIH International Symposium, Current research trends in prenatal craniofacial research, Bethesda.
2. 1981. University of Alabama Sponsored Workshop, In vitro techniques for teratology, Tuscaloosa.
3. 1981. Spina Bifida Association National Meeting: Mechanisms of neural tube closure and their relationship to malformations, San Jose.
4. 1983. Society for Developmental Biology Sponsored Workshop, Mammalian Limb Regeneration: Organ culture of mammalian embryos, University of California, Irvine.
5. 1983. International Symposium: Molecular Aspects of Abnormal Development: Mammalian embryos in culture: A new approach to investigating normal and abnormal developmental mechanisms, Salzburg, Austria.
6. 1983. Pharmaceutical Manufacturer's Association Foundation Sponsored Workshop: Toxicology: Determinants of susceptibility and predictability, Chicago.
7. 1984. The Joint American-Swiss Seminar on Alternative Embryotoxicity and Teratogenicity Tests, Zurich, Switzerland.
8. 1985. World Conference on Diabetes Research: Current States and Future Directions. Sponsored by the Juvenile Diabetes Foundation International, Monte Carlo, Monaco.
9. 1986. Chemical Industry Institute of Toxicology, Eighth conference: Approaches to Elucidate Mechanisms in Teratogenesis, Research Triangle Park, North Carolina.
10. 1986. Center for Alternatives to Animal Testing, Rodent embryos in culture: A new approach to teratogen testing.
11. 1986. 93rd Ross Conference on Pediatric Research: Infant of the Diabetic Mother, Carefree, Arizona.
12. 1987. NIH/NICHHD Workshop on the influence of the embryonic environment on early neural growth and differentiation, "Mechanisms of Neural Tube Closure," Washington, DC
13. 1987. Harvey C. Knowles Memorial Symposium, "Congenital Malformations in Infants of Diabetic Mothers. National Meetings for the American Diabetes Association, Indianapolis, IN
14. 1987. Teratology Society Meetings: Symposium on the Diabetic Induced Embryopathy, "Teratogenic Effects of Diabetes in Animals," Palm Springs, CA.
15. 1987. European Teratology Society Meetings: Symposium on In Vitro Approaches to Teratology, "Influence of Maternal Factors on Embryonic Development In Vitro," Switzerland.

16. 1987. Workshop: In Vitro Techniques for Teratological and Toxicological Research. "The Role of Pharmacokinetics and Embryonic Metabolism in the Expression of Abnormal Development," Nyon, France.
17. 1988. Meeting of the Middle Atlantic Reproduction and Teratology Association: "Possible Biochemical Mechanisms for the Maternal Effects of Diabetes on the Embryo," Philadelphia, PA.
18. 1988. NIEHS/NIDR International Conference on Research Advances in Prenatal Craniofacial Development: "Regulatory Mechanisms of Craniofacial Development," Research Triangle Park, NC.
19. 1988. American Diabetes Association, New York Downstate Affiliate Meeting on Diabetes and Pregnancy: "The Effects of Maternal Diabetes on Embryogenesis," Cornell Medical School, New York, NY.
20. 1989. The American Cleft Palate-Craniofacial Association, Symposium on Advances in Craniofacial Developmental Biology and Clinical Implications: "Regulatory Issues in Early Mammalian Embryogenesis: Autocrine and Paracrine Factors," San Francisco, CA.
21. 1989. Teratology Society Symposium on Developmental Regulation: A Multilevel Process: "Growth Factors and Morphogens in Embryogenesis," Richmond, VA.
22. 1989. NIEHS/National Toxicology Program Workshop and Conference on "Current Developments in In Vitro Toxicology: Use of In Vitro Tests for Mechanistic Studies in Teratology," Triangle Park, NC.
23. 1989. University of Virginia Diabetes Research and Training Center, International Conference on Research and Therapeutic Issues in Diabetes: "Effects of Diabetes on Embryonic Growth and Development," Charlottesville, VA.
24. 1989. Spina Bifida and Neural Tube Defects Etiology Research Conference: "Mechanisms Responsible for Neural Tube Defects," Wilmington, DE.
25. 1990. North Carolina Chapter of the Society of Toxicology Annual Meeting: "Whole Embryo Culture and Studies of Embryonic Metabolism," Triangle Park, NC.
26. 1990. Society of Toxicology Annual Meeting, Continuing Education Course: "Changes in Intermediary Metabolism during the Organogenesis Period," Miami, FL.
27. 1990. Southeastern Regional Genetics Group Annual Meeting: "Diabetes and Pregnancy," Atlanta, GA.
28. 1990. NIH/NICHHD Conference on a Reassessment of the Associated Midline Defects: Discussant and Presenter: "Cellular Mechanisms of Midline Defects," Washington, DC.

29. 1991. International Diabetes Federation Congress: Symposium speaker on Fuels and Hormones in Fetal Development: "Mechanisms of fetal embryopathy studies with rodent embryo culture," Washington, DC.
30. 1991. David W. Smith Workshop on Malformations and Morphogenesis: "A potential role for proto-oncogenes and homeobox genes in normal and abnormal craniofacial and cardiac development," Lake Arrowhead, CA.
31. 1991. Gordon Conference on Mechanisms of Toxicity. "Fuel mediated teratogenesis," Meriden, NH.
32. 1992. New York Academy of Sciences Conference on Maternal Nutrition and Pregnancy Outcome: "Effects of altered maternal metabolism during gastrulation and neurulation stages of embryogenesis," San Diego, CA.
33. 1992. David W. Smith Workshop on Malformations and Morphogenesis: "Origins of neural tube defects," Winston-Salem, NC.
34. 1992. European Teratology Society. Invited Speaker: "The role of embryonic adnexes and yolk sac in human and animal nutrition," Wurzburg, Germany.
35. 1992. NIEHS Workshops on Molecular and Cellular Mechanisms of Early Mammalian Development. Workshop Organizer: "Growth and differentiation factors in development," Research Triangle Park, NC.
36. 1994. NIH Workshop on Antisense Technologies and Their Use in Developmental Biology, Washington, DC.
37. 1994. Teratology Society Symposium on Antisense for Basic Research and Biotherapeutics: "Antisense Oligonucleotides and Mouse Whole Embryo Culture Technology Show Roles for Wnt and Engrailed Genes in Patterning and Differentiation of the Central Nervous System," Las Croabas, Puerto Rico.
38. 1994. IV Symposium on Vertebrate Whole Embryo Culture: "Use of Whole Embryo Culture and Antisense Oligonucleotides to Study Gene Functions."
39. 1995. Methods in Developmental Toxicology/Biology. "Mouse Whole Embryo Culture and Antisense Oligonucleotides: A New Approach to Studying Genes Involved in Gastrulation and Neurulation." Free University of Berlin, Berlin, Germany.
40. 1995. Mini Medical School Symposium: "Searching for Answers to Birth Defects." University of North Carolina, Chapel Hill.
41. 1996. Mini Medical School Symposium: "Searching for Answers to Birth Defects." University of North Carolina, Chapel Hill.
42. 1996. Where It All Begins: The Fetal to Neonatal Transition: Preparation for Intervention. "Embryological Development of the Neurons System." Division of Physical Therapy and Office of Continuing Medical Education, Chapel Hill, NC.

43. 1996. Birth Defects: "Embryological Mechanisms of Reduction Defects of the Limbs." J.C. Self Research Institute, Greenwood, SC.
44. 1996. Mini Medical Symposium: "Searching for Answers to Birth Defects." Charlotte, NC.
45. 1996. Smith Conference: "Limb Morphogenesis in the Oral-Facial-Digital Spectrum", Lake Arrowhead, CA.
46. 1996. Birth Defects Prevention, Detection and Management for the Obstetrician: "Diabetic Embryopathy," Chapel Hill, NC.
47. 1997. North Carolina Medical Genetics Conference: "Understanding Genes and Development: Where, When, How," Research Triangle Park, NC.
48. 1997. The Limb Deficient Child: "The Embryology of the Developing Limb," Scottish Rite Hospital for Children, Dallas, TX.
49. 1997. Health Care in Transition: The Role of Maternal and Child Health: "Neural Tube Defects" Maternal and Child Health Conference, Asheville, NC 4/20/97
50. 1997. Teratology Society Keynote Lecture: "Targeted Gene Disruptions as Models for Abnormal Development," West Palm Beach, FL.
51. 1999. National Birth Defects Prevention Network, 2nd Annual Meeting: "Embryology and Birth Defects of the Heart," Washington, DC.
52. 1999. Critical Windows of Exposure for Children's Health, EPA Workshop. Richmond, VA.
53. 1999. Current Status and Knowledge on Folate and Human Development, EPA Workshop. Research Triangle Park, NC.
54. 2000. National Birth Defects Prevention, 3rd Annual Meeting: "Limb Development and Limb Reduction Defects," New Orleans, LA.
55. 2001. National Birth Defects Prevention Network, 4th Annual Meeting: "Embryology of Oral Facial Clefts," San Antonio, TX.
56. 2000. Oklahoma Folic Acid Conference, Oklahoma City, Embryology of Neural Tube Defects.
57. 2001. American Association Anatomists, Orlando, FL, Teaching Embryology in Today's Medical Curriculum.
58. 2001. Micronutrients Workshop, Antigua, Guatemala, State of the Art in Folic Acid Research.

59. 2003. Workshop on the Role of Fumonisin in Neural Tube Defects, Atlanta, GA, "Inhibition of Neural Crest Cell Development by Folate Deficiency and fumonisins in Murine Embryos."
60. 2003. National Birth Defects Prevention Regional Meeting, Denver, CO, Heart Defects.
61. 2004. National Birth Defects Prevention Network Annual Meeting, Salt Lake City, "Embryology of the Heart and the Origin of Cardiac Defects."
62. 2004. FASEB Experimental Biology Meeting, Washington, DC, 4/17-21/04, Teaching Embryology to Medical Students(co-organizer).
63. 2004. The Toxicology Forum, Aspen, CO, Invited Speaker: "Fumonisin: Developmental Defects.
64. 2004. CDC Birth Defects Regional Meeting, Little Rock, AR, "Embryology of Abdominal Wall Defects."
65. 2005. National Birth Defects Prevention Network, Phoenix AZ, "Embryos and Teratogens: What, When, and a Little Bit of Why."
66. 2006. National Birth Defects Prevention Network Annual Meeting, Washington, DC, "ART to Bands to Schisms: The Origin of Controversial Birth Defects."
67. 2006. Department of Pediatrics Grand Rounds Conference, University of South Florida, College of Medicine, Tampa, FL, "The Effects of Alcohol and Drugs on Fetal Development."
68. 2006. Greenwood Genetic Center, Greenwood, SC, Graduate Program: 1. Early Development: Gastrulation and Neurulation; 2. Craniofacial Development.
69. 2007. National Birth Defects Prevention Network Annual Meeting, San Antonio, TX, "Embryology of the Heart and the Origin of Congenital Cardiac Defects.
70. 2008. National Birth Defects Prevention Network Annual Meeting, Washington, DC, "Embryology of Ventral Wall Defects."
71. 2008. Teratology Society, Monterey, CA, Teaching Teratology in the 21st Century: "Why Would Anyone Want to Learn Embryology and How Would It Be Taught if They Did?"
72. 2009. National Birth Defects Prevention Network Annual Meeting, Nashville, TN, "Embryology of the Head and Neck."
73. 2009. Canadian Congenital Anomalies Surveillance Network Scientific Meeting, Ottawa, Canada: "Genitourinary Development: Embryology and Defects.

74. 2010. University of Florida Birth Defects Surveillance Program, Birth Defects Education Conference, Tampa, FL: "Embryology and Teratogenesis of Neural Tube Defects."
75. 2010. National Birth Defects Prevention Network Annual Meeting, Washington, DC: "Embryology of the Skeletal System."
76. 2011. National Birth Defects Prevention Network Annual Meeting, Orlando, FL: "Vulnerable Periods of Embryonic Development."
77. 2011. The 3rd Annual American Journal of Medical Genetics Lecture, Salt Lake City, UT: "Congenital Heart Defects, Serotonin, and the SSRIs as Teratogens."
78. 2012. South Carolina Genetics Conclave, "Congenital Heart Disease: Genetics of the Heart," Greenwood Genetics Center, Greenwood, SC
79. 2012. National Birth Defects Prevention Network Annual Meeting, Arlington, VA: "Sonic Hedgehog, Decoder Rings, and Signaling Agents: How to make an Embryo."

Public Health Birth Defects Prevention Presentations

1. 2003. Montana Public Health Meeting, Missoula, MT, "The Embryology of Birth Defects and the Role of Folic Acid."
2. 2004. Virginia Regional Perinatal Council Meeting, Williamsburg, VA, "The Origin and Prevention of Birth Defects: Timing is Everything."
3. 2005. Eastern Virginia Perinatal Council Regional Conference, Chesapeake, VA, "Embryology of Birth Defects."
4. 2005. Florida Healthy Start 2005 Zero Exposure Conference: Pregnancy Strategies and Substances, Tampa, FL, "Effects of Alcohol and Drugs on Fetal Development."
5. 2006. Florida Statewide Women and Substance Abuse Conference, ST Petersburg, FL, "Understanding the Effects of Maternal Perinatal Substance Use and Abuse."
6. 2006. Florida Statewide Women and Substance Abuse Conference, ST Petersburg, FL, "Understanding the Effects of Maternal Perinatal Substance Use and Abuse."
7. 2007. Newborn Emergency Transport System Conference: The Heart of the Matter, Charlottesville, VA, "Cardiac Embryologic Development."
8. 2007. Florida Healthy Start Coalition funded by the March of Dimes, A Series of 5 Grand Rounds in: Pensacola, Jacksonville, Orlando, Tampa, and Miami FL, "The Origin and Prevention of Birth Defects."

9. 2007. Everglades Area Health Education Center, West Palm Beach, FL, Interconception/Preconception Conference, "Folic Acid and Preconception Care: The Ways to Prevent Birth Defects."
10. 2008. Perinatal Outreach Education, Roanoke, VA, "The Origin and Prevention of Birth Defects."
11. 2008. Mid-Atlantic Neonatal/Perinatal Summit, Norfolk, VA, "Gastroschisis and Ventral Wall Defects."
12. 2008. Birth Defects Monitoring and Prevention in Georgia Partner's Meeting, Atlanta, GA, "Developmental Embryology of the Origin of Orofacial Clefts."
13. 2009. Bay, Franklin, Gulf Healthy Start Coalition Annual Meeting, Panama City, FL, "Prevention of Birth Defects."
14. 2009. CDC Birth Defects Regional Meeting, Little Rock, AR, "Congenital Heart Defects."
15. 2012 David W. Smith Workshop on Malformations and Morphogenesis, Lake Lanier, GA, "Heart Development: Early Patterning Portends the Quality of Pitter-Patter."
16. 2012 3rd Annual Congenital/Fetal Imaging Conference, University of Utah, Salt Lake City, UT, "Embryology of the Heart."

Visiting Professorships

1. 1977. Thomas Jefferson Visiting Scholar, Downing College, Cambridge University, United Kingdom.
2. 1990. Roerig Visiting Professorship Award in Diabetes Research from Yale University, Provided by Pfizer Pharmaceutical Company, 1990.

Special Honors and Awards

1. Interdisciplinary Honors Program, Wake Forest University, Winston-Salem, 1969-1971.
2. First Place Award, North Carolina Academy of Science, Wake Forest University, Winston-Salem, 1971.
3. Pharmaceutical Manufacturer's Association Foundation Fellowship, stipend and research support for doctoral dissertation research, 1975.
4. Awarded the Thomas Jefferson Visiting Scholar Fellowship to Downing College, Cambridge University, United Kingdom, 1977.
5. Awarded the Roerig Visiting Professorship in Diabetes Management to Yale University, sponsored by Pfizer Pharmaceutical Company, 1990.

6. Baby Booty Award, North Carolina Perinatal Society for contributions to the North Carolina Folic Acid Campaign, 1998.
7. The Godfrey P. Oakley Jr. Award, from the National Birth Defects Prevention Network, Inc: For significant contributions to the field of birth defects, 2002.